Plastics Recycling Program in Romania

Project Title: Recycling and Reuse of PET Waste in Iasi County, Romania
Leader: Carmis (Iasi, Romania)
Partner: GeoScience & Technology (Winston-Salem, N.C.)
Location: Iasi, Romania
Project Duration: January 2000-August 2000
EcoLinks Project Investment: Total EcoLinks Project Investment: $42,859: EcoLinks Grant Support: $35,000; Project Team Cost Share Contribution: $7,859.

Best Practice: Transferable Solutions

This project provides an environmentally sound, market-based solution to waste management problems that can be applied throughout Romania and other parts of the region. By demonstrating a feasible, environmentally sensitive plastics recycling program in Iasi County, Romania, this project provides a reliable guide for reducing pressure on declining landfill space and for regenerating secondary plastic resources which lowers pollution and costs associated with the production and consumption of new plastic. The broader implementation of this program throughout Romania would allow for the recycling of 4,000 tons of plastic material per year and generate economic benefits valued at $3 million over a five-year period. Other areas, where the problem of collecting and recycling plastic waste is similar (e.g., Moldova region), can also benefit from applying the tools and techniques asserted in this project.

Project Summary

Waste management in Romania, while challenged by multiple factors, is especially plagued by an increasing amount of plastic waste in conjunction with declining landfill space. Recycling

programs, for example, have not been fully explored or tested and landfill space is nearing capacity. A large portion of solid waste entering Romanian landfills is PET plastic waste. PET use is growing in Romania at a rate of 15% per year. Multiple industries in Romania import and use approximately 30-40,000 tons of PET per year as a raw material for making food and beverage packaging and for fiber production. In Iasi County alone, for example, a total of 970 tons of PET waste is generated per year of which 80% ends up at the local dumpsite that is almost full.

Through a collaborative effort between Carmis, an environmental consulting and research firm in Romania, and GeoScience & Technology, a consulting firm in the United States, this Best Practice provides an empirically tested framework for establishing a full-scale plastics recycling program in Romania. This project ultimately demonstrates concrete solutions for reducing the need for primary plastics production, alleviating unnecessary pressure on limited landfill space, and regenerating plastic resources.

The plastics recycling program, designed and tested in Iasi County, Romania with the support of an EcoLinks Challenge Grant, comprised an initial assessment of plastic waste; strategies for collecting, separating, and processing the waste; and identification of financial mechanisms for program implementation. While this project initially focused on recycling PET, comprising the largest amount of plastic waste in Romania, this initial research element revealed that an optimum plastics recycling program should include the collection and recycling of all types of plastic. Also, critical to the program was the development of a successful public awareness campaign.

With the full implementation of the plastics recycling program developed in this project, approximately 300 tons of plastic waste per year will be removed from the solid waste stream currently going to the landfill in Iasi. Within five years, it is predicted that a total of 4,000 tons of plastic material per year could be diverted from the landfills throughout Romania. The economic benefits of operating a recycling facility for Iasi would be the immediate employment of more than 20 people, investments of $100,000 in facilities and equipment, and an increased tax base for the City and County of Iasi. Implementing the program throughout Romania yeilds a five-year projected income of up to $3 million.

Project Activities

This project was implemented in two phases. Each phase involved a series of actions and products that are provided in detail below.

Phase I. Assessment and Outreach

1. Conducted assessment of plastic waste generation

Action: All sources of PET waste in Iasi County were identified. Surveys of the landfill and commercial sources were conducted. Information regarding the opportunities, statistics, and

companies involved in plastics recycling was acquired from the Romanian National Commission for Recycling Materials in Bucharest. Current recycling efforts were also researched.

Product(s): 1) Compilation of data regarding plastics use and disposal, especially PET, in Iasi and in Romania in general

2. Developed and implemented public outreach campaign

Action: Educational and awareness raising activities were conducted in Iasi schools. Outreach activities also targeted the general public and commercial organizations. Five conferences were organized for high school students. Information centers stressing the importance of collecting and recycling plastic waste were established.

Product(s): 1) Format and materials for presentations on recycling at schools and other organizations 2) Five conferences at high schools 3) Information centers

Phase II. Business Plan

1. Drafted business plan for processing plastic waste

Action: A draft PET business plan was developed and translated into Romanian. It outlined the technical and economic aspects of plastics recycling. Partners and investors to support and implement the plan were identified.

Product(s): 1) A list of companies that might be interested in investing in a facility for the collection and recycling of plastic materials 2) A business plan of alternatives for implementing a plastic recycling program and a methodology for the selection of the best alternative

2. Finalized business plan

Action: The business plan was finalized outlining the best alternative plastics recycling methods available. The most feasible alternative was selected based on its applicability and implementation capacity for Iasi city and county. Contact with potential investors was made.

Product(s): A finalized business plan outlining a comprehensive plastics recycling program for Iasi city and county including a flow diagram, and a list designating requirements in terms of specific equipment, facilities, and personnel.

Project Benefits

Several notable benefits were generated as a result of this project. This project demonstrates a successful way 1) to strengthen the capacity to recycle plastic waste in Romania, 2) to reduce environmental impacts associated with pollution from new plastics production and incineration of plastic waste and pressure on limited landfill space, and 3) to promote economic efficiency by

opening new markets for collecting, processing, and consuming regenerated plastic. A detailed description of the project benefits is provided in the following subsections.

Capacity Building Benefits

This project envisions a workable scheme for recycling plastic waste. The scheme provides a basis for a new skilled workforce in the collection, processing and recylcing of plastic waste. Through the public awareness campaign, the public is better equipped to participate in recycling. One of the most notable capacity building benefits established through this project, however, is the clarification of financial investment schemes that strengthen Romania's capacity to operate and participate in a free market system.

Environmental Benefits

There are notable environmental benefits derived from implementing a plastics waste recycling program as outlined in this project. They include:

- Approximately 300 tons of plastic waste per year will be removed from the solid waste stream currently going to the landfill in Iasi. Within five years, it is predicted that a total of 4,000 tons of plastic material per year will be diverted from the landfills throughout Romania.

- There will be less demand for newly manufactured plastics as recycled sources of plastic are collected and processed for re-use. This reduces industrial activity that contributes to air pollution as well as reducing pressure on landfills.

- Plastics generally do not degrade in the landfill and the incineration of plastic produces air pollution with particularly noxious particulates. Landfills while necessary are an environmental blight. Diverting waste from landfills and avoiding incineration of plastic waste reduces the need for landfills and alleviates air pollution problems.

Economic Benefits

Through the research and planning conducted as part of this project, it was shown that the recycling of plastic waste, especially PET, can be very profitable. The economic benefits of investment, employment, earnings, exports and the reduction of imports, can be substantial especially if applied throughout the country. The details of these benefits are outlined below.

- The economic benefits of establishing a recycling facility for Iasi would be the immediate employment of more than 20 people, investments of $100,000 in facilities and equipment, and an increased tax base for the City and County of Iasi.

- A five-year projection indicates that this project would generate investments of $3.5 million total, expenditures of approximately a total of $500,000 associated with a labor-intensive collection process. The projected total sales in the fifth year of operation would

be approximately $3 million. Earnings before interest, taxes, and depreciation are projected to be $1.6 million.

- Capital flow would increase as property is purchased for the construction of new facilities or redevelopment of existing unused facilities.

- Overseas benefits include lucrative investment opportunities in environmentally friendly operations in a developing country (i.e., Romania), and increased sales in technologically advanced equipment.

Lessons Learned

This Best Practice demonstrates a program for recycling plastic that can be applied in other areas throughout the region. During the demonstration in Iasi County, several key insights were gained that provide the opportunity to improve future applications of the methodology and technologies used in this project. These key insights are provided here; they are the lessons learned during the implementation of this project.

- The key to establishing a successful recycling operation is emphasizing collection over processing. It is important to ensure that sufficient material is collected before large capital investments are put into processing. Developing a business plan for a recycling facility can be difficult without an established program for collecting waste. This predicament also makes it difficult to get investors given the speculative nature of the facility without a collection program in place. With a plastic waste collection system in place, however, investors are very interested in supporting a recycling facility.

- The research part of this project revealed that it is economically and environmentally preferable to collect and recycle all types of plastics, not just PET as was originally planned. The research aspect of this project, therefore, was important ultimately to defining the project.

- Acquiring prices from various Romanian organizations can be difficult. Concise information about unit rates for rail transportation of the waste, for example, can require repeated requests made to multiple parties and the results are not always the most useful. It may be that the rate of inflation and constant devaluation of the Romanian currency in relation to the US dollar make it difficult to gain commitment on pricing of various services or equipment necessary to implement a recycling program.

- Communication can be most challenging and time consuming if there are significant language barriers (i.e., parties do not speak the same language).

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